

Remarks

The various parts of the Office Action are discussed below under corresponding or appropriate headings.

Response to Amendment

The withdrawal of the finality of the last Office Action is noted with appreciation.

Allowable Subject Matter

Allowable claim 67 has been rewritten in independent form and is now in proper form for allowance.

Rejection of Claims based on Machida

Claims 59-66 were rejected as being anticipated by or unpatentable over Machida (JP 63098134) taken alone or in combination with Avanzino (US 5,776,834). The rejections are now moot inasmuch as claim 59 has been amended.

As amended, claim 59 recites a semiconductor device comprising a patterned layer of conductive material disposed on a substrate and having a region thereof bordered by air gaps, and an overcoat layer overlying the patterned layer of conductive material and the air gap, the overcoat layer having a portion thereof overlying the conductive material in the region bordered by the air gaps and extending below the height of the adjacent air gaps, and the air gaps being of uniform width¹ over the height thereof.

Machida discloses air gaps, but the air gaps are not of uniform width nor is there any suggestion to provide air gaps of uniform width. Moreover, Machida does not appear to enable the formation of uniform width air gaps. These comments also are applicable to Avanzino.

For at least the foregoing reasons, the rejection of claims 59-63 should be withdrawn.

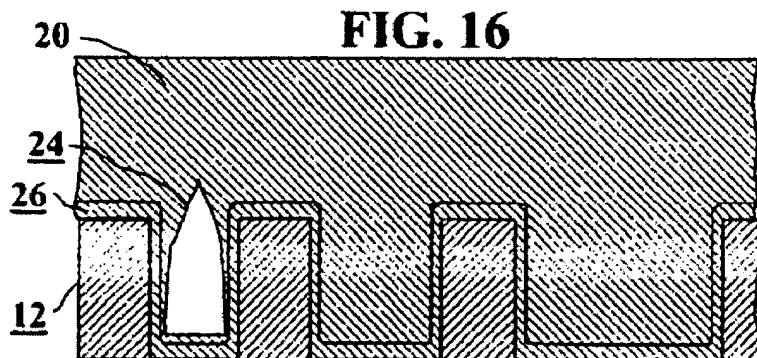
¹ Support for "uniform width" can be found in the drawings.

Rejection of Claims based on Avanzino

Claims 68-71 were rejected as being anticipated by or unpatentable over Avanzino.

Claim 68 recites a semiconductor device comprising a patterned layer of conductive material disposed on a substrate and having a region thereof bordered by air gaps, and an overcoat layer overlying the patterned layer of conductive material and the air gap, the overcoat layer having a portion thereof overlying the conductive material in the region bordered by the air gaps, and a surface of the conductive material adjacent a respective air gap being covered by a discrete film of non-conducting material that does not extend over the conductive material beyond the air gap.

According to the Examiner, Avanzino discloses a semiconductor device including all of the features set forth in claim 68. In particular, the Examiner considers the layer 26 to be a "discrete film" as set forth in claim 68. The layer 26, however, extends over the conductive material beyond the air gap. This can be clearly seen in FIG. 16 (reproduced below), where the layer 26 extends along the side of the conductive line 12 and then over the conductive line. In this regard, it is noted that the term "discrete" was added to address a contention that any part of the layer can be isolated and considered to be a film as set forth in the claim. Consequently, a portion of the layer 26 is not a discrete layer as it is integral with other portions of the layer 26. Thus, one must look at the entire layer 26 to determine whether or not it extends over the conductive material beyond the air gap. As can be seen in FIG. 16, layer 26 does not meet the limitation of claim 26 that the discrete film not extend over the conductive material beyond the air gap.



For at least the foregoing reasons, the rejections of claims 68-71 is improper and should be withdrawn.

Claims 72 and 73

On the cover page of the Office Action, claims 72 and 73 were included in the listing of claims that were rejected, but no basis for the rejection of claims 72 and 73 was set forth in the balance of the Office Action. Claims 72 and 73 were discussed on page 3 of the Office Action in paragraph 6, but the basis for the rejection was not set forth. Consequently, it would not be appropriate to comment on the rejection until the basis for the rejection is made clear.

New Claim 74

New claim 74 is being submitted for favorable consideration. Claim 74 recites a semiconductor device comprising a substrate having a planar extent; a patterned layer of conductive material disposed on the substrate and having a region thereof bordered by air gaps; and an overcoat layer overlying the patterned layer of conductive material and the air gap, the overcoat layer having a portion thereof overlying the conductive material in the region bordered by the air gaps, said portion extending below the height of the adjacent air gaps, and the air gaps having upper sides that are parallel to the planar extent of the substrate. As seen in FIG. 2F for example, the upper sides of the air gaps 38 are parallel to the planar extent of the substrate 32.


Neither Machida nor Avanzino disclose air gaps having upper sides that are parallel to the planar extent of the underlying substrate. Moreover, Machida and Avanzino do not appear to enable the formation of air gaps with upper sides that are parallel to the planar extent of the underlying substrate.

Conclusion

This application is believed to be in condition for allowance and an early issuance of a notice of allowance is earnestly solicited.

Respectfully submitted,

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